

THE HUNGARIAN REED WOLF (*CANIS SPP.*): SPECULATIONS
ON AN EXTIRPATED AND FORGOTTEN POPULATION
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INTRODUCTION

The Hungarian reed wolf was a small wolf-like or large jackal-like canid. It was historically classified as an extinct subspecies of the grey wolf named *Canis lupus minor*, but its phylogenetic origin wasn't well explained. The reed wolf was first discussed by zoologist Kramer in 1756. Ogérien (1863) described a small Austro-Hungarian wolf as *Canis lupus minor*, a subspecies of the grey wolf that lived in western Hungarian territories. (Zoologists now believe that *C. l. minor* was the same as the common European wolf, *Canis l. lupus*.) Discussion and debate on the taxonomy of the Austro-Hungarian reed wolf was undertaken by later European scientists and naturalists. Mojsisovics (1897) first suggested the reed wolf was the diminutive *Canis lupus minor*, and this was for many years generally accepted.

Various studies in the twentieth century were carried out regarding the taxonomy of the reed wolf. Dr. Gyula Éhik (1938) reclassified the reed wolf, stating it was the same canid as *Canis aureus hungaricus*. According to many researchers, *C. a. hungaricus* is morphologically the same as the Dalmatian jackal. Kretzoi (1947) proposed that the reed wolf was a distinct Hungarian jackal, giving it a new scientific name: *Canis aureus ecsedensis*. Dr. Eugen Nagy (1956) adhered to this classification and supported the historical extirpation of the unique reed wolf. János Szunyoghy (1957) announced the invalidity of *hungaricus* as a separate subspecies. He also proposed (Szunyoghy 1959) that the reed wolf was simply

a larger form of European golden jackal (not even a separate subspecies of *Canis aureus*). Other scientists besides Szunyoghy and Nagy have also speculated that it wasn't a variety of wolf, but just a golden jackal or possibly even a feral domestic dog. In the past, after the Turkish wars, feral domestic dogs bred outside village areas. It is possible that many dogs remain in the wild. However the theory that these were responsible for reed wolf reports has not stood scientists' scrutiny. Tratz (1958) conducted detailed studies on the few known museum specimens in an attempt to clarify the reed wolf's identity, and his proposal that it was a morphologically small wolf was well-received (Shuker 2007).

One interesting idea without confirmation in later years, was that the once-mighty flood plains of Hungary influenced the development of smaller, short-haired wolves, named later the reed wolf (Bioport 2008). As previously explained, many scientists have investigated the viability of the subspecies theory and even whether it was a distinct species of European wolf. After all, if the canid was a new species or a morphological variant, it would be a wind-fall for many research institutes, and in Hungary and Austria it could have been an important tourist attraction.

Bauer (1960) ended the debate by eliminating the reed wolf as a subspecies of the grey wolf from the list of Austrian fauna. It was argued that the data about this animal are too poorly documented and it was nothing more than the common golden jackal—now the officially accepted view. There have been other attempts to classify the reed wolf as a local jackal subspecies, a jackal with genetic introgression from wolf genes, or an inbred jackal population endemic to Central Europe.

This animal lived on the moors along the border of Austria and Hungary. G. H. Kramer, in his first book (1756) of Austrian fauna, mentioned large numbers of reed wolves (in German, *rohrwolf*) living in the region of Lake Neusiedler See, where the golden jackal has re-settled again in the early twenty-first century (Arnold et al. 2011). Nowadays, the animal is considered extinct and its taxonomy can be determined only on the basis of museum specimens located primarily in natural history museums in Hungary. (See more in

the work of Prof. Éhik. His original material, e.g. the voucher specimen of *Canis aureus hungaricus*, is in the Hungarian Natural History Museum.) Thanks to Ludwig Heinrich Jeitteles we can also observe a few specimens of this wolf-like canid at the Institute of Natural History Museum in Vienna.

DISCUSSION ON THE GOLDEN JACKAL

The reed wolf first appeared as a European cryptid in a famous book by cryptozoologist Dr. Karl P. N. Shuker, *Extraordinary Animals Worldwide*, in 1991. The question of its phylogeny remained: what animal could be the true reed wolf? Was it a jackal with wolf-like characteristics, a wolf that looked like a jackal, or something else? One hypothesis even suggested that the name *reed wolf* was given to both the grey wolf and the golden jackal, as a generic name for any Hungarian canid, recognized or unrecognized. The reed wolf became extinct due to excessive hunting and destruction of its environment, and as we know it was endemic, such actions would easily have destroyed such a small population. Apparently, the “diminutive wolf” population inhabited open woods and areas overgrown with shrubs and reeds (hence the local name). Some people speculated that it was a unique local hybrid between the golden jackal and the grey wolf, which went extinct as a result of destructive human activity. We can’t explicitly confirm any hypothesis without genotyping the peculiar specimens. Perhaps in the future scientists will confirm or reject these theories through the analysis of mtDNA or nuclear microsatellites by PCR method.

Has the native jackal survived? It is not certain, but it seems that it hasn’t, because in this case the golden jackal could not take advantage of the same niche as well as its larger cousin, and also its greatest enemy, the grey wolf. A native jackal would likely be absorbed into the invading jackal population from the south. Nowadays, of course, there are wolves in these areas, but they do not form a stable population and belong to the typical subspecies. Wolves in Austria appear sporadically, and the population is not larger than 20 individuals. In Hungary, the population consists of one known breeding pack in the northern part of the country,

occupying a vast territory that includes both Slovakia and Hungary (Hausknecht et al. 2009).

Currently the reed wolf habitat in Hungary and Austria is inhabited by regenerated populations of the golden jackal as well as by occasional European grey wolves (in the case of Hungary see Bihari et al. 2007; Heltai 2010). These animals took up the niche occupied by the former extirpated canids. Wolves prefer deciduous mixed forests, while jackals prefer open steppe and extended marshy areas. On the other hand, jackals try to avoid areas with lots of snow. According to Kryštufek et al. (1997), the jackal is rare or absent from the hilly regions of its range here. The golden jackal originated in India, from where it expanded into northern, eastern and western Africa, and into southeastern Europe, including Greece, Turkey, Serbia, Hungary, and Slovakia. The species is now spread throughout the Balkans. The past twenty years have led to an increased population and expanded range of *Canis aureus moreoticus* in these lands that it formerly inhabited (see more in Szabo et al. 2009; Arnold et al. 2011).

The golden jackal (*Canis aureus*), the indigenous predator of Hungary, is listed in the Hungarian Red Data Book as an extinct species. The original population of native golden jackals in Hungary declined dramatically at the beginning of the second half of the 20th century and was finally extirpated due to habitat fragmentation and hunting pressure (Kryštufek et al. 1997). The last known specimen of this indigenous population was shot in 1942 in near the village of Derecske, situated in the Hungarian Great Plain. This species appeared again in south-central Europe as an invasive non-native, extended its range northwest, where it arrived in Hungary and Serbia (Szabo et al. 2009; Heltai, unpublished). It was first reported in 2006 from southern Moravia in the Czech Republic (Koubek and Cervený 2007). It has been documented in northeastern Italy (1988), Germany (1996), and Slovakia (1989) (Hell & Bleho 1995).

Golden jackal returned to southern Hungary as early as the late 1970s, with the first breeding pairs being detected near the southern border in Transdanubia, then between the River Danube and

Tisza. Independent data collection and analysis confirmed that golden jackals have settled in Hungary. The population now seems to be quite large in the southeastern part of the country. The rate of expansion and population growth are typical for invasive species. The population in Hungary increased in numbers dramatically after the early 1980s, when immigrating individuals reappeared in its former territories, leading in 1991-92 to the re-establishment of a viable population (Arnold *et al.* 2011). According to official hunting bag data, the number of bags reported has continuously increased, with 11 jackals shot in 1997 and a total of 163 specimens shot up to 2006 (Szabo *et al.* 2009).

What are the reasons for the rapid spread of the invading golden jackal in Europe? The answer is simple: deforestation and the expansion of steppe habitat and open spaces with swampy areas created environmental conditions that were very favorable for the jackals. Other advantages to jackals included the reduction of the wolf population, which ensured a larger share of easy prey (domestic livestock and carcasses), the abandonment of poisoned baits, and the natural cycles of population dynamics. We also have to mention that the golden jackal now has only one true competitor with European-wide occurrence and a high population—the red fox (*Vulpes vulpes*). The red fox uses the same habitats (Giannatos 2004; Giannatos *et al.* 2005) and food resources (Lanszki *et al.* 2006; Lanszki & Heltai 2010) as the golden jackal, but the golden jackal is stronger than the red fox. The jackal also has a better reproductive strategy and adapts better to different habitats, from the marshland to the dry grassland (Szabó *et al.* 2008).

CONCLUSION

Can we explain the origin of the reed wolf? The reed wolf was probably an indigenous golden jackal, a locally unique “genetic source population,” also known as an Evolutionary Significant Unit (ESU), now extinct. Most likely, the last representative of the unique *reed wolf* form of canid was killed March 4, 1950, in the state forests of the Austrian district of Rotmos. In Hungary, the last known specimen was shot in 1942. It was likely a historically

separated larger form of the golden jackal, adapted to life in the swamp reeds, with a unique level of genetic diversity and greater differentiation from other populations through reproductive isolation (high F_{ST} index with isolation by distance). Mythology likely also played a part, if the golden jackal was sometimes confused with a locally occurring population of European grey wolf, bursting into the legend of the “reed wolf.”

Nowadays, Hungary is inhabited by the invasive southern golden jackal, a new opportunistic predator, but it is really not the same as the Hungarian reed wolf, or more correctly the *reed jackal*. However, without DNA samples from the few remaining museum specimens, we will never know for certain the real secret of the “wolf from the reeds.”

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